AKAI

MODEL VS-K288, K338
MODEL VS-P170EM, P1700
MODEL VS-R170EM, R1700

SCHEMATIC DIAGRAMS AND PC BOARDS

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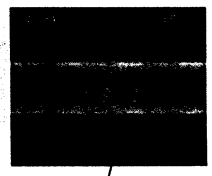
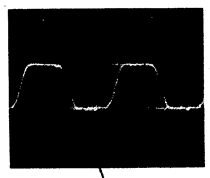
Use these schematic diagrams and PC boards together with the provided service manual.

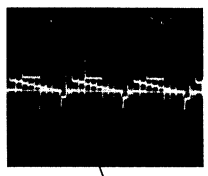
SWITCHING PULSE

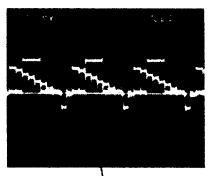
ENVELOPE DETECT OUT (LOWER:V.SWP)

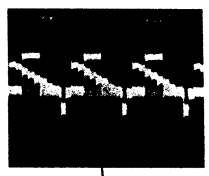
PB ENVELOPE OUT (LOWER:V.SWP)


REC SIGNAL IN


REC Y FM SIGNAL

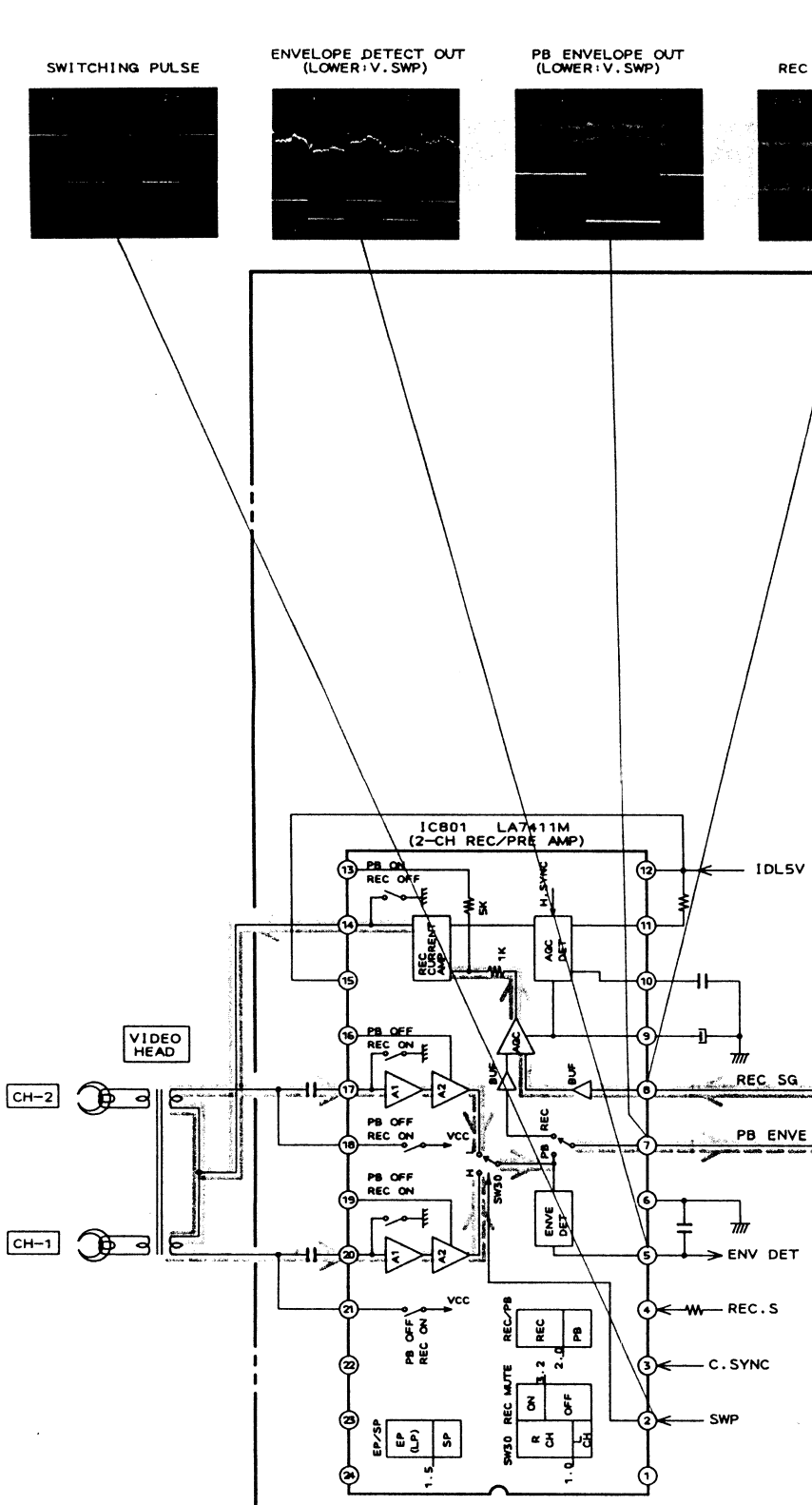

REC MAIN EMPHASIS OUT

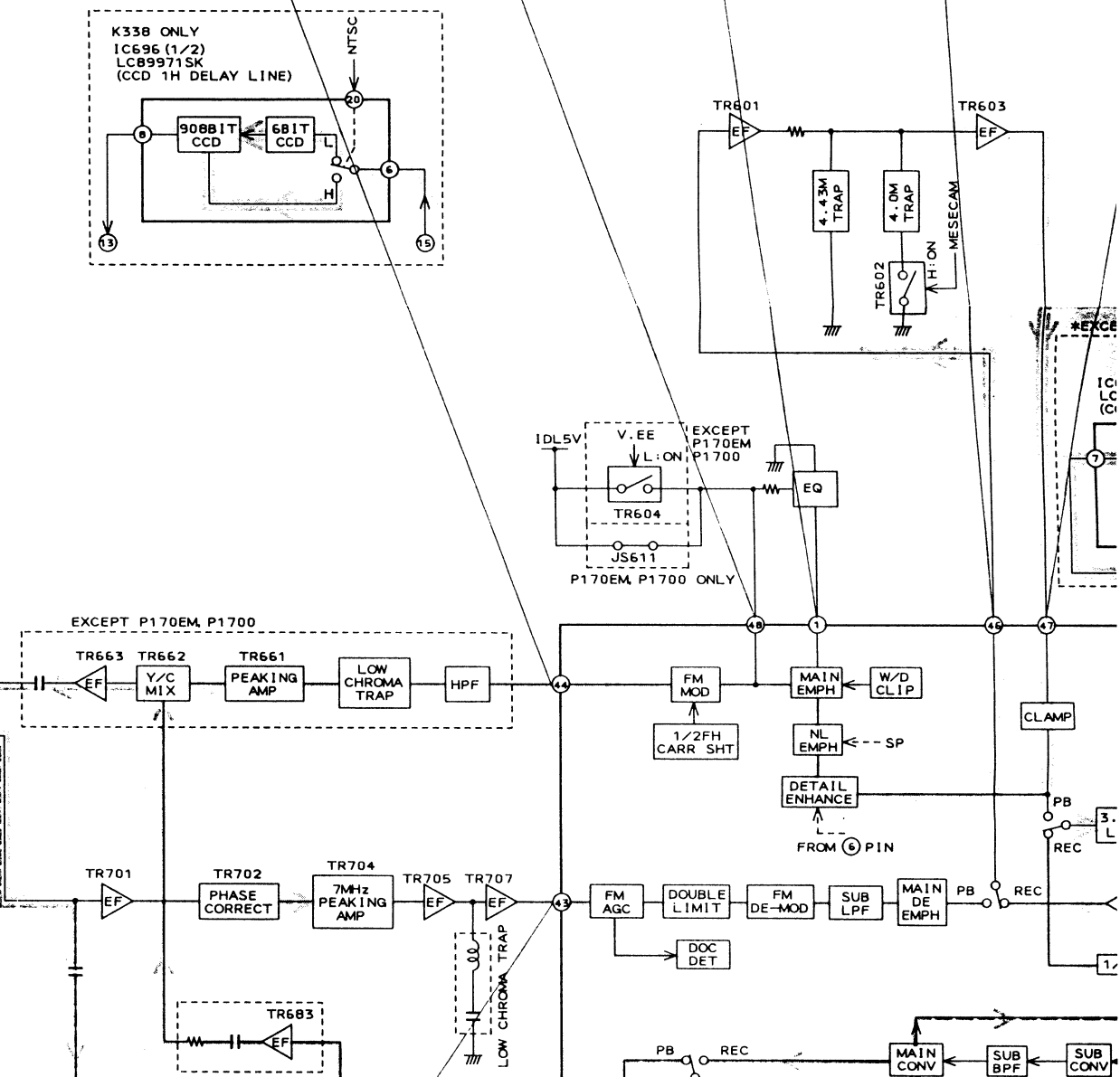

EQUALIZER (REC)

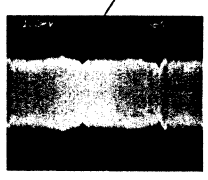

(PB) LOW PASS FILTER IN

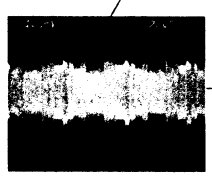
(PB) LOW

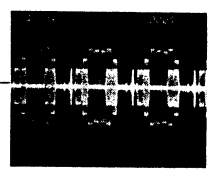
K338 ONLY
IC696 (1/2)
LC89971SK
(CCD 1H DELAY LINE)



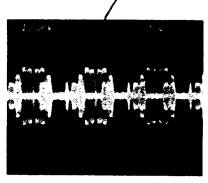


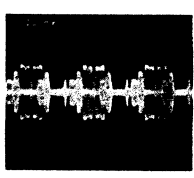

PB FM SIGNAL IN

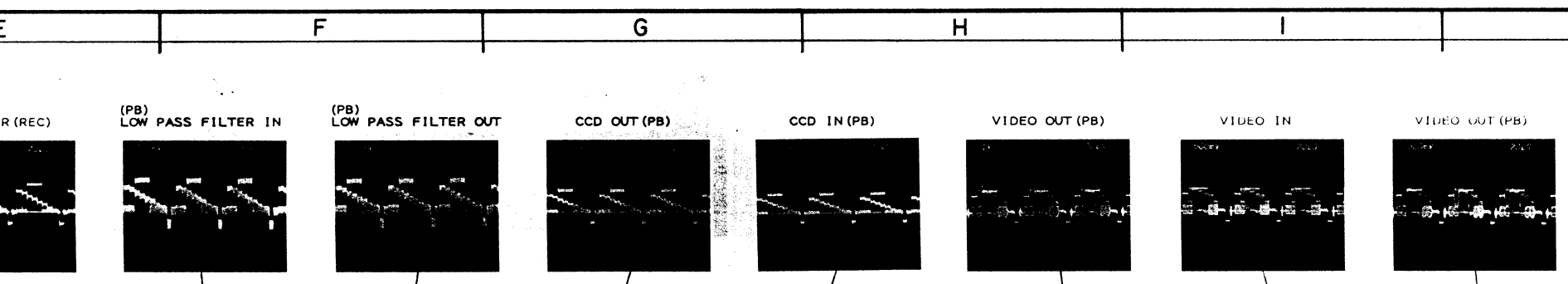

PB LOW CHROMA IN


REC LOW CHROMA OUT

COMB FILTER OUT (PB)


COMB FILTER IN (2) (PB)


PB COMB FILTER IN (1)



IC201 μPD78134AGF (SERVO/SYSTEM CONTROL MI-COM)

(OPEN) 51 NT PB
K338 ONLY JS202 50 NT REC
JS203 59 IHQPB
K288, 338 ONLY

COVPOW 42
SYSTEM 58
I-HQ 53
IDL5V
SW1
PAL ⟷ MESECAM

NAP 24, NTSC 47, TRICK 55
V.EE 49
REC.S 46, ENV DET 27, MESECAM 31
C SYNC 12
CK 57
3.58REC 56 (K338 ONLY)
SWP 13
VP 15
P/M/N 50

TR601 EF
TR603 EF
4.43M TRAP
4.0M TRAP
TR602 H:ON
MESECAM

*EXCEPT K338

IC697 (1/2) LC89975M (CCD 1H DELAY LINE)
NTSC 12
7 843BIT CCD / 6BIT CCD, L/H, 5

IDL5V
SWP
C.SYNC OUT
C.KILL
3.58 REC
(C ROT IN) SWP
VP IN
TAPE SPEED SELECT
VIDEO SYSTEM CONTROL
EXCEPT K288, K338
JS606
JS605
K338 ONLY
NTSC
NL & DETAIL ENHA. CONT
50Hz/60Hz CONT

IDL5V
MD1
+B
MOD+B
A. IN
V. IN
ANT. IN
RF OUT
(RF CONVERTOR)
L: ON
TR103
FROM AUDIO CIRCUIT

48 EQ 1
46 47 13 15 5 6 3 9 40 35 12 14 22 26 18

MAIN EMPH
W/D CLIP
NL EMPH
SP
DETAIL ENHANCE
FROM 6 PIN

CLAMP
VCA
LPF
DOC
NOR
REC
PB
ATT
SP
YNR
DETAIL ENHANC
NL DE-EMPH
DOUBLE HP NOICAN
PICT CONT
Y/C MIX
SP: L, LP: M, EP: H
PAL: L, MESECAM: M
NTSC: H

3.5M LPF
LIM K1
CORR
LIM K2
6dB
SUB LPF
FM DE-MOD
MAIN DE EMPH
SYNC SEPA
QV/QH INSRT & W/D CLIP
VIDEO AMP
TR2
75Ω
PJ1
VIDEO OUT
VIDEO IN
EXCEPT P170EM P1700

1/2
VIDEO AGC
AGC DET
DELAY

IC601
K338: LA7440M
EXCEPT K338: LA7447BM
C.ROT
MAIN CONV
SUB BPF
SUB CONV
4PHASE SHIFTER
4.43M BPF
ACC' D AMP
BURST EMPHA
6dB
PB AMP BU.DE-EM KILLER
REC NTSC & ALL PB
LPF
MES
INVERT

2fsc
NAP
NTSC
(NTSC→PAL)
FSC BPF
P/S DET
7447 ONLY
CHROMA N.CAN
7440 ONLY
BGP GEN
HALF H KILLER
K338 ONLY
X602 4.43MHz

XO IN XO OUT
NAP/NOR
EXCEPT K338: 4.43MHz
K338: 3.58MHz
X601
EF TR651

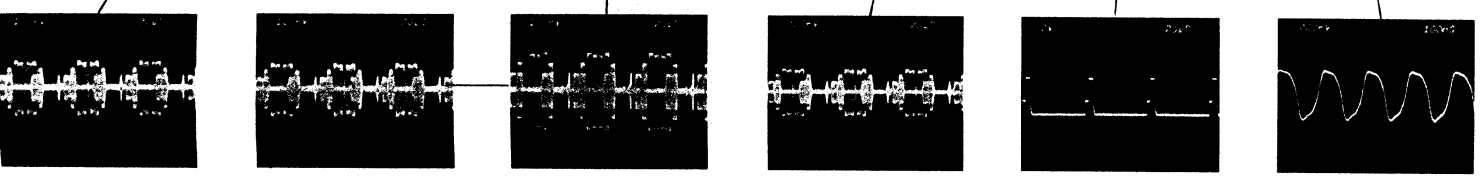
*EXCEPT K338
C IN2 C IN1
858BIT CCD 1H
2.5BIT CCD
847BIT CCD 1H
C OUT S/H
φ1 φ2 3fsc VCO
CLK 4.43M
IC697 (2/2) LC89975M
1H/2H DELAY
(CCD COMB FILTER)

MAIN PCB

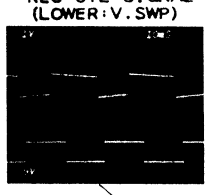
PB Y SIGNAL LINE
REC/EE Y SIGNAL LINE
PB CHROMA SIGNAL LINE
REC/EE CHROMA SIGNAL LINE

VS-P170EM, P1700
VS-R170EM, R1700
VS-K288, K338
VIDEO BLOCK DIAGRAM

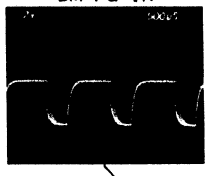
No. 3-1 V123351M A1



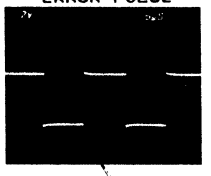
REC CTL SIGNAL
(LOWER:V.SWP)



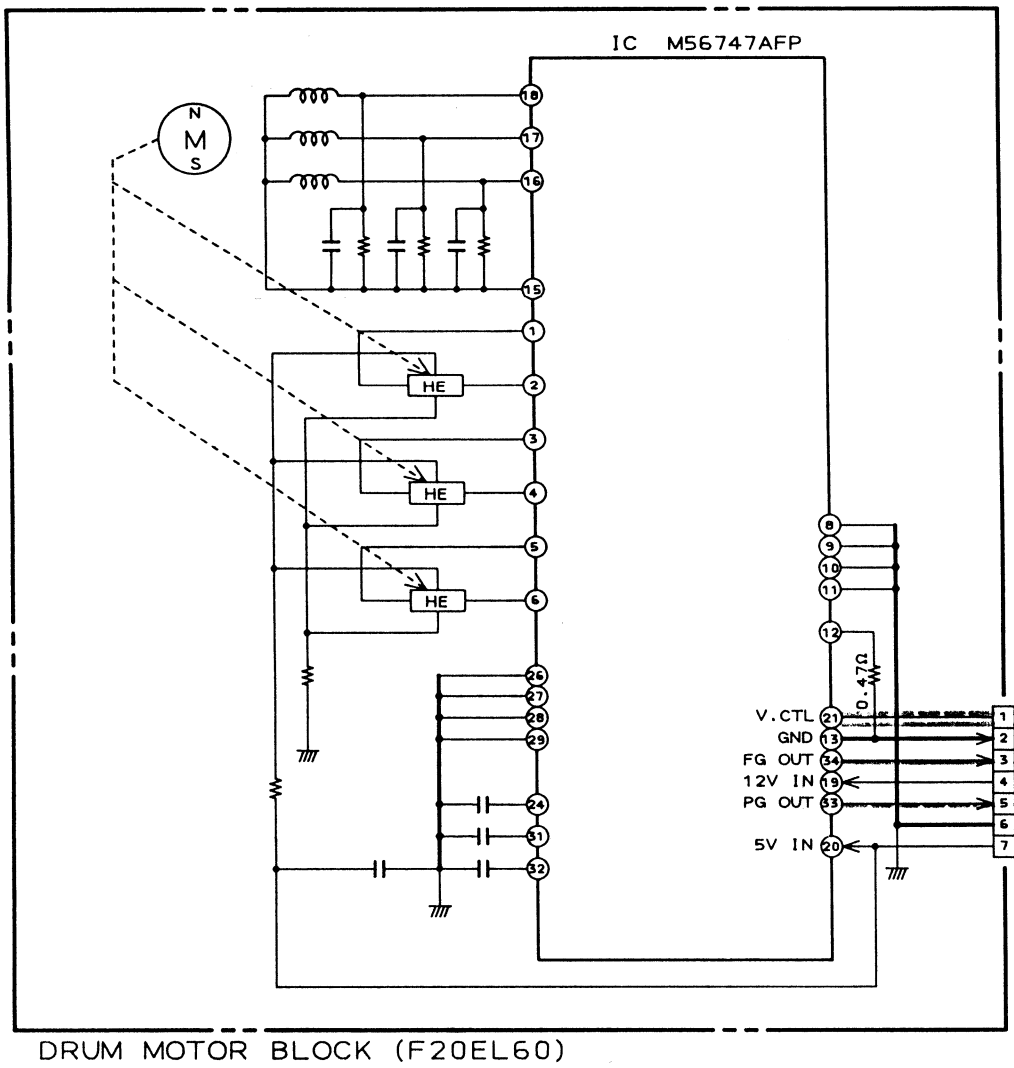
DM FG IN



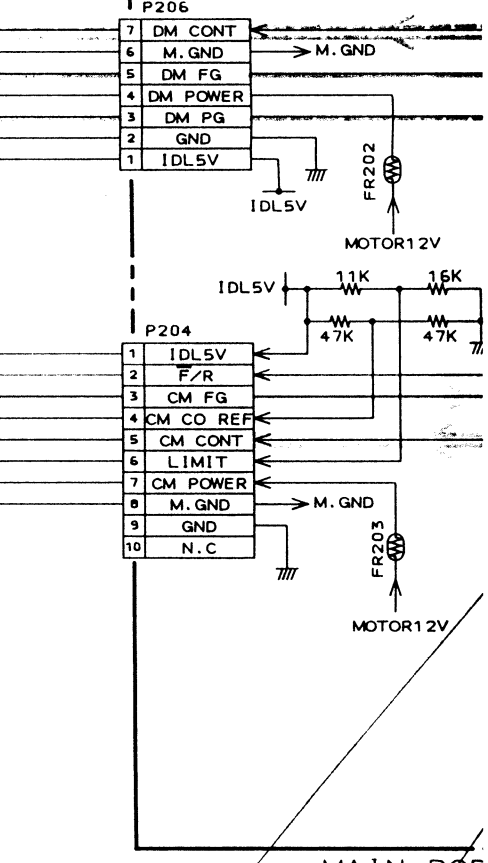
DM SPEED/PHASE
ERROR PULSE



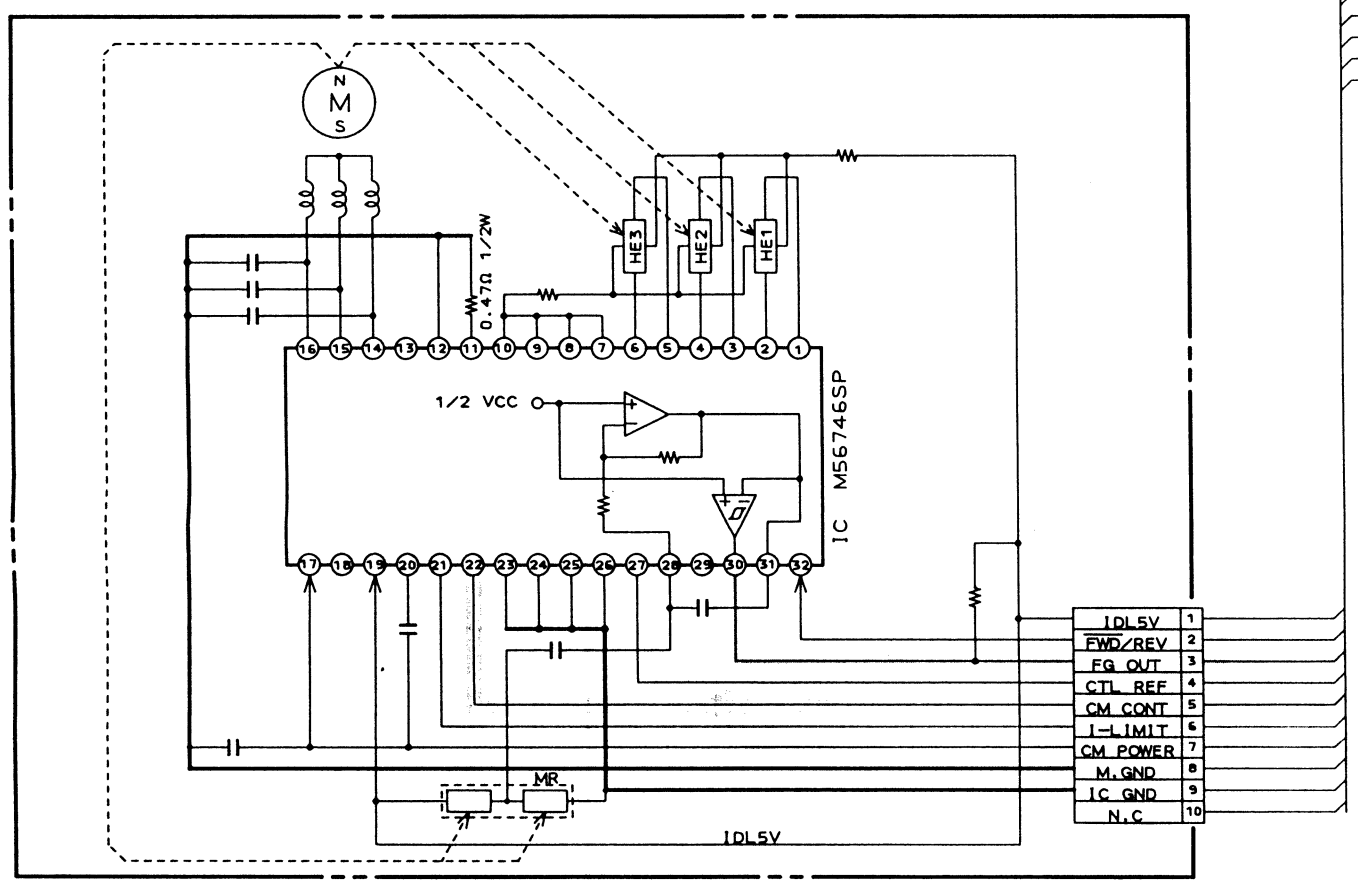
IC M56747AFP



DRUM MOTOR BLOCK (F20EL60)



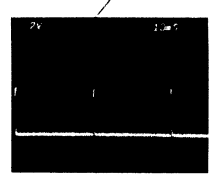
MAIN PCB



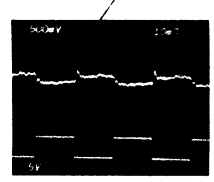
CAPSTAN MOTOR BLOCK (F2QTB24)

MODE DETECT SWITCH CODE TABLE

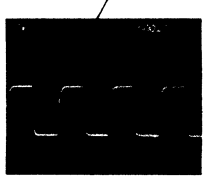
MODE / OUTPUT	EJECT	UNLOADED	POWER OFF (WITH CASSETTE)	REVIEW	PAUSE /SLOW
RSW 1	L	H	L	H	L
RSW 2	L	H	H	H	H
RSW 3	H	L	L	L	H



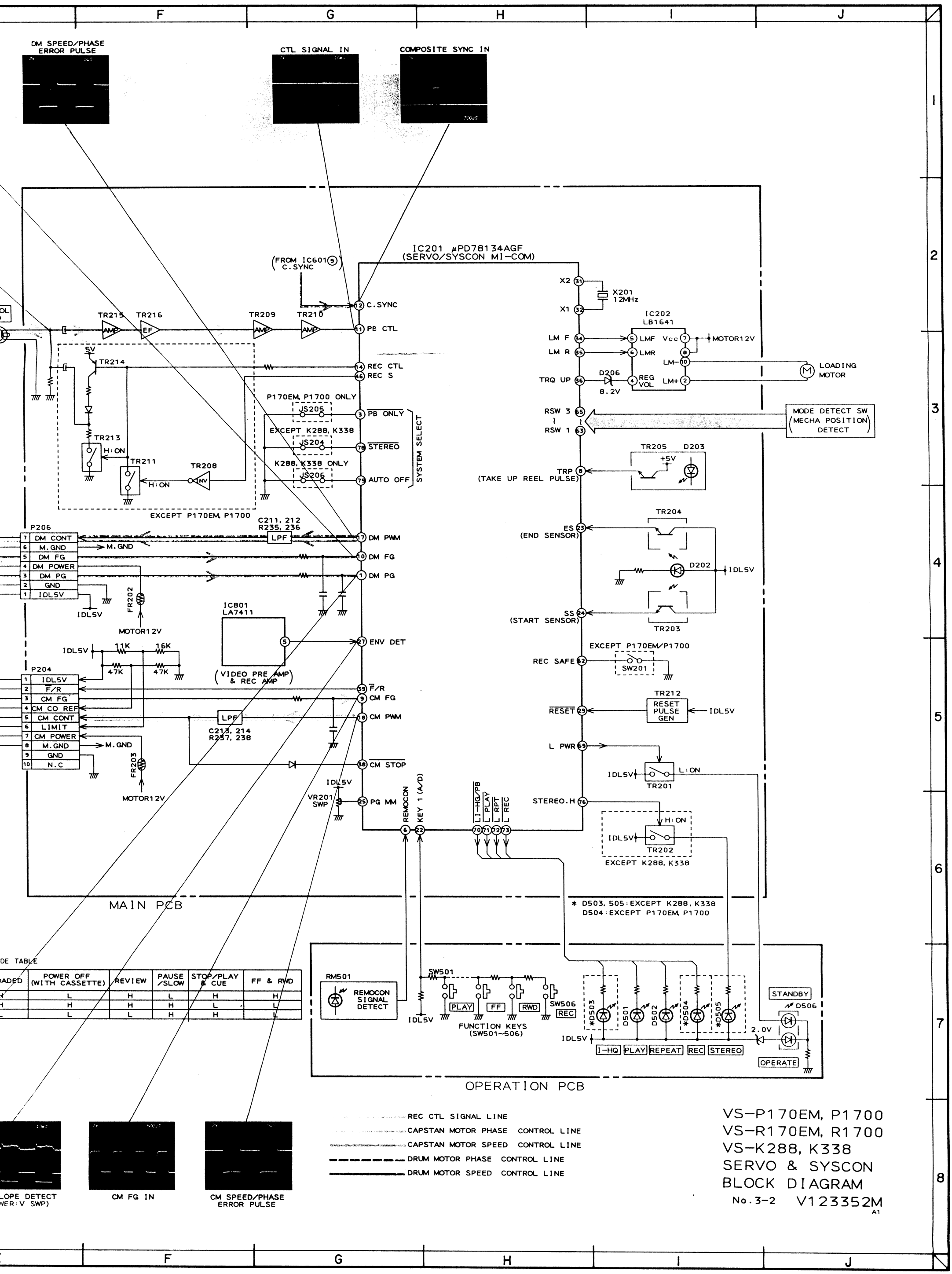
DM PG IN



ENVELOPE DETECT
(LOWER:V SWP)



CM FG IN



DE TABLE

DADED	POWER OFF (WITH CASSETTE)	REVIEW	PAUSE /SLOW	STOP/PLAY & CUE	FF & RWD
H	L	H	L	H	H
H	H	H	H	L	L
L	L	L	H	H	L

LOPE DETECT
WER:V SWP)

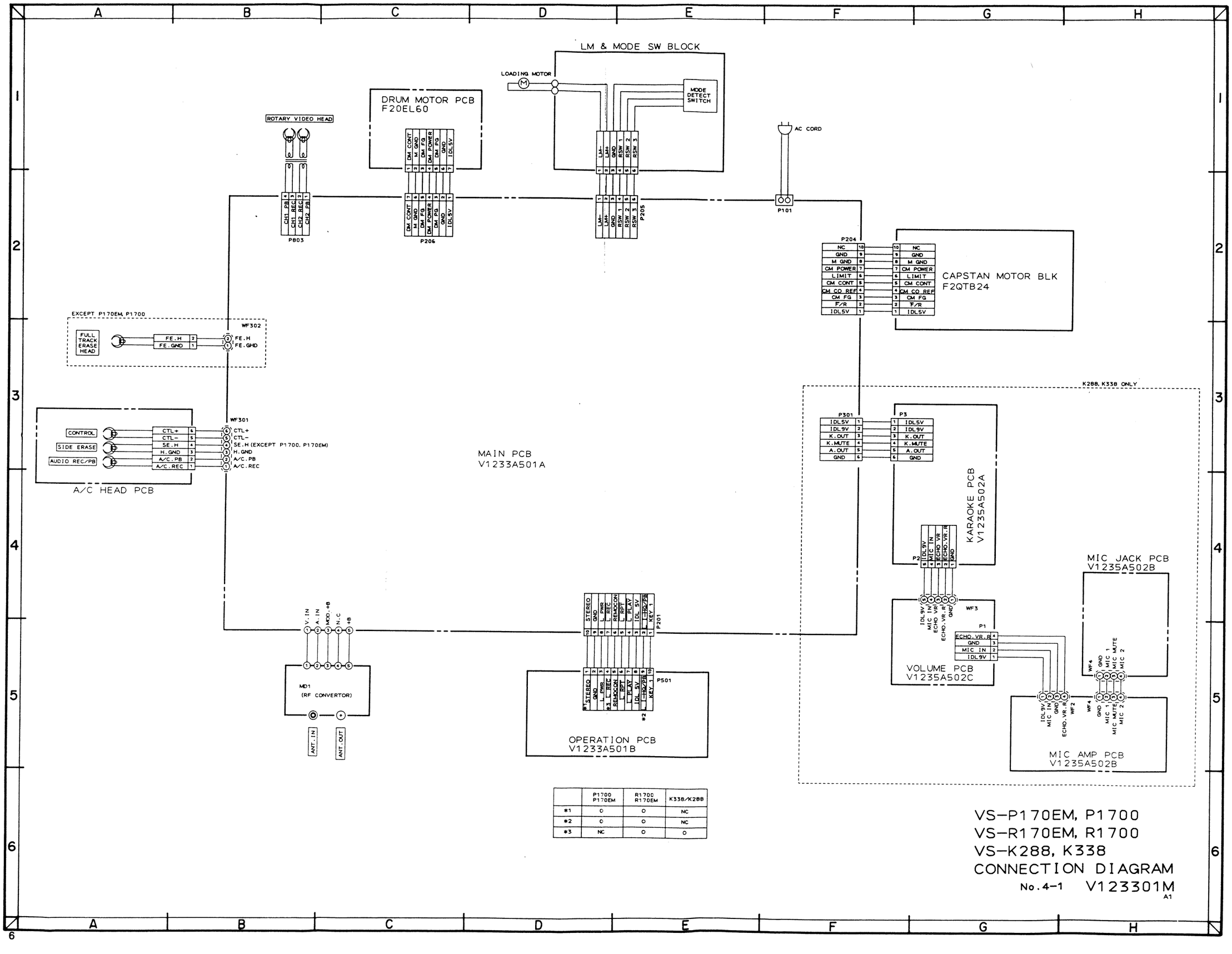
CM FG IN

CM SPEED/PHASE ERROR PULSE

VS-P170EM, P1700
VS-R170EM, R1700
VS-K288, K338
SERVO & SYSCON
BLOCK DIAGRAM

No. 3-2 V123352M
A1

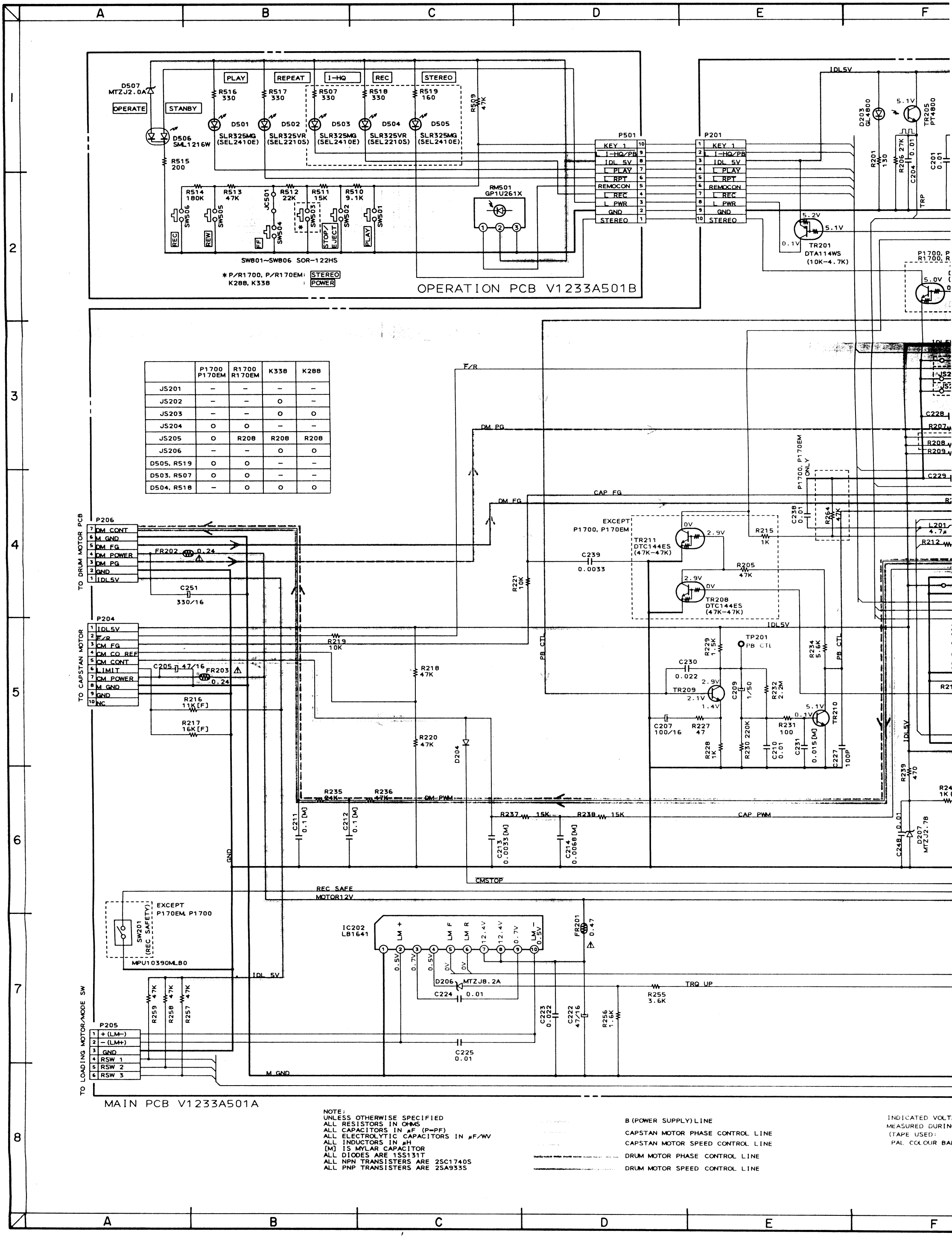
VS-P170EM, P1700
VS-R170EM, R1700
VS-K288, K338
AUDIO
BLOCK DIAGRAM
No.3-3 V123353M
A2



	P1700 P170EM	R1700 R170EM	K338/K288
*1	O	O	NC
*2	O	O	NC
*3	NC	O	O

VS-P170EM, P1700
VS-R170EM, R1700
VS-K288, K338
CONNECTION DIAGRAM

No.4-1 V123301M
A1



	P1700 P170EM	R1700 R170EM	K338	K288
JS201	–	–	–	–
JS202	–	–	O	–
JS203	–	–	O	O
JS204	O	O	–	–
JS205	O	R208	R208	R208
JS206	–	–	O	O
D505, R519	O	O	–	–
D503, R507	O	O	–	–
D504, R518	–	O	O	O

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN µF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN µF/WV
ALL INDUCTORS IN µH
[M] IS MYLAR CAPACITOR
ALL DIODES ARE 1SS131T
ALL NPN TRANSISTERS ARE 2SC1740S
ALL PNP TRANSISTERS ARE 2SA933S

B (POWER SUPPLY) LINE
CAPSTAN MOTOR PHASE CONTROL LINE
CAPSTAN MOTOR SPEED CONTROL LINE
DRUM MOTOR PHASE CONTROL LINE
DRUM MOTOR SPEED CONTROL LINE

INDICATED VOLT
MEASURED DURIN
(TAPE USED:
PAL COLOUR BA

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
(TAPE USED:
PAL COLOUR BAR TAPE)

WARNING: ⚠ AND ▨ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSMENT: ⚠ ET ▨, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ, POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

VS–P170EM, P1700
VS–R170EM, R1700
VS–K288, K338
MAIN 1/2 (SERVO/OPE BLK) SCHEMATIC DIAGRAM

No.4–2 V123302M
A1

AC CORD
P101
CCT-2302-0371
F101
T2.0A
FC101
FC102
D151
431K
L101
33M
C103
C102
0.1 (M) /AC275
C104
D104
D103
D102
D101
D101~104
1N4006
C103~107
E2200P (M)
/AC400
C105
C106
C107
VIDEO IN
VIDEO OUT
AUDIO IN
AUDIO OUT
AUDIO (L) OUT
AUDIO (R) OUT
*MD1
K338:YAA21-1032G PB G/I/K
P170EM, R170EM:NJH30329002
EXCEPT ABOVE:YAA21-1044G G/K
* PJ1B
T6861-AABA
* PJ1A
T6718-AABA
* PJ1
T6646-AAEA
V IN
A IN
MOD+B
NC
+B
MESECAM
PAL
SW1
SK12F14G
R1 5.6K
R2 2.2K
R3 1K
R9 1K
RB 75
L1 100
L2 100
C1 47/6.3
C2 0.01
C3 0.01
C4 10/16
C5 47/6.3
C6 220/6.3
C7 0.01
C10 220/6.3
C11 0.01
R4 51
R5 47
R6 75
TR2 2SA933S
2.6V
1.9V
TO FE.HAED
FE.H
H.GND
WF302
TO A/C.HEAD PCB
CTL+
CTL-
NC
H.GND
A/C PB
A/C REC
P1700, P170EM
R1700, R170EM
K288, K338
WF301
P301
TO KARAO
GND
A.OUT
A.MUTE
K.MUTE
EXCEPT P1700, P170EM
C304 8200P (M)
TR302 2SC3330
FL301
R329 0
TR301 2SD2132
C303 8200P
C302 3300P
FR301 10 (11.5V)
C301 22/16
IC102 TA78L09S
C120 47/16
C121 47/16
C131 0.1
SYSTEM
MOTOR12
VIDEO IN
VIDEO OUT
IDL5V
CTL+
IDL9V
R302 10K
R326 47K
C321 220/6.3
D301
TR303 DTC144TS (47K)
NTSC
A.OSC
TR305 DTA144TS
TR306 DTC144TS
R309 5.1K
R328 47K
REC.S
K338 ONLY
C315 0.01 (M)
R325 47K
R324 3K
R323 1K
R322 1K
R329
C305 10/16
R305 30K
R315 560K
R316 2K
R317 2.2M
R318 10K
R319 10K
R320 18K
C316 0.1/50
C317 47/16
C318 0.01
IC301 BA7797
IS305
D901
D902
TO VIDEO HEAD BLK
CH1 PB
CH1 REC
CH2 REC
CH2 PB
P803
R805 10
L801 100
C807 0.01
C815 0.01
R807 680
C812 39P
C814 39P
C813 0.01
R806 620
C808 0.01
C809 0.01
C810 0.01
C811 0.01
R804 20K
C819 0.1
C816 470P
C805 100/10
C804 0.01
C803 1/50
R803 1.3K
IC801 LA7411
REC CURRENT
C802:EXCEPT
P1700, P170EM
C801 0.022
R802 18K
C817 0.01
R801 47K
TP702
SW.POINT
R809 100K
C.SYNC
C818 51P
REC.S
ENV.DET
R808 10K
EXCEPT P1700, P170EM
MESECAM
R717 22K
C710 0.01
R716 39K
TR708 2SA933AS
TR681 DTA114ES
R715 820
R719 910
L681 68
C681 180P
TR701 2SC1740S
R701 1.5K
TP701
FB.ENV
C701 0.01
L705
C703 18P
R702 18K
TR702 2SC1740S
R703 22K
R704 1K
R705 1K
L701 39
R706 560
C702 39P
R707 4.7K
R708 470
C704 11P
TR704 2SC1740S
C705 82
L703 47
L702 4.7
TR705 2SC1740S
R710 510
R711 2.2K
R712 1K
L704 180
C707 200P
TR707 2SC1740S
R713 1K
C711 0.01
MESECAM
PB-Y
TR663 2SA933AS
R676 2.2K
R675 2.2K
R674 5.6K
C667 0.01
R672 1.5K
R673 1K
TR662 2SC1740S
R671 24K
R670 15K
C666 0.01
R669 150
C665 91P
R668 1.5K
C664 120P
L664 5.6
R666 470
TR661 2SC1740S
R667 1.5K
L663 330
R665 3K
R664 1K
C663 0.01
L662 220
C662 150P
L661 68
C661 120P
R663 510
R662 1K
R661 1K
EXCEPT P1700, P170EM
L665 100
L641 100
C656 0.01
C654 100/16
C653 0.01
C652 0.047 (M)
C631 1/50
X602 4.434MHz
C682 0.01
C686 0.022 (M)
C687 1/50
R681 1K
C683 0.047
R683 10K
C684 0.033 (M)
C708 0.01
C601 0.01
C602 10/6.3
R601 4.7K (F)
C606 1/50 (NP)
C604 24P
C603 33P
R603 1.5K
C605 180P
TR601 2SA933AS
R604 2.2K
R605 470
MESECAM
TR602 DTC144ES
C607 47P
L602 33
C608 27P
L603 47
R606 2.2K
TR603 2SC1740S
P1700, P170EM
JS611
R611 2.7K
C609 10P
TR604 DTA114ES
EXCEPT P1700
P170EM
C612 20P
C610 360
C611 15P
EXCEPT K288, K338, OEM
C613 0.01
C614 10/16
R613 1K
R617 5.6K
R616 3.6K
C616
R617
SYSTEM
3.58REC
TRICK
REC.C
CONV PCW
D110 HZS16-1
D109 ERB83-004
D108 ERB84-009
D105 ERA22-10
396V
D106
D107
TR101 2SC4908
TR102 2SD2132
R103 82K (2W)
R100 220K
R101 220K
C109 0.047 (K) /400
C110 1/50
R104 300 (2W)
R105 300 (2W)
C111 0.018 /50 (M)
C113 1000P
R150 100
R151 1K
R106 1.0 (1W)
C108 YK47/400
R102 82K
C112 1000P (M)
R107 1K
R108 1K
T101 V1233EM-D
C116 YXF 1000/6.3
C115 YXF 470/16
R152 100
C118 47/16
C132 0.1
C119 47/6.3
L102 33
R113 1K
R114 1K
IC103 TA76431S
R109 100
R110 1K
C117 0.1 (M)
C152 47000P
R111 1.1K (F)
R112 1K (F)
PH101 PS2561-1-V
C106
C107
R150 100
R151 1K
R152 100
R153 1K
R154 1K
R155 1K
R156 1K
R157 1K
R158 1K
R159 1K
R160 1K
R161 1K
R162 1K
R163 1K
R164 1K
R165 1K
R166 1K
R167 1K
R168 1K
R169 1K
R170 1K
R171 1K
R172 1K

	P1700	P170EM	R1700	R170EM	K288	K338
PJ1		○		—		—
PJ1A		—		○		—
PJ1B		—		—		○
R8		—		○		—
R9		○		○		—
C11		○		○		—
R312		—		○		○
R314	430		200		200	
R317		—		○		○
R323		—		○		○
R324		—		○		○
R325		—		○		—
JS301		○		—		—
JS305		—		—		○
C317		—		○		○
C319		—		○		○
P301		—		—		○
R922	100		100		0	
R311		—		○		○

C616 EXCEPT P1700, P170EM

R617 EXCEPT P1700, P170EM

THE DC VOLTMETER'S NEGATIVE INPUT WAS CONNECTED TO THE Ⓐ POINT WHEN THE PRIMARY SECTION WAS MEAURED.

*THE PRIMARY INPUT VOLTAGE WAS AC 220V.

CAUTION

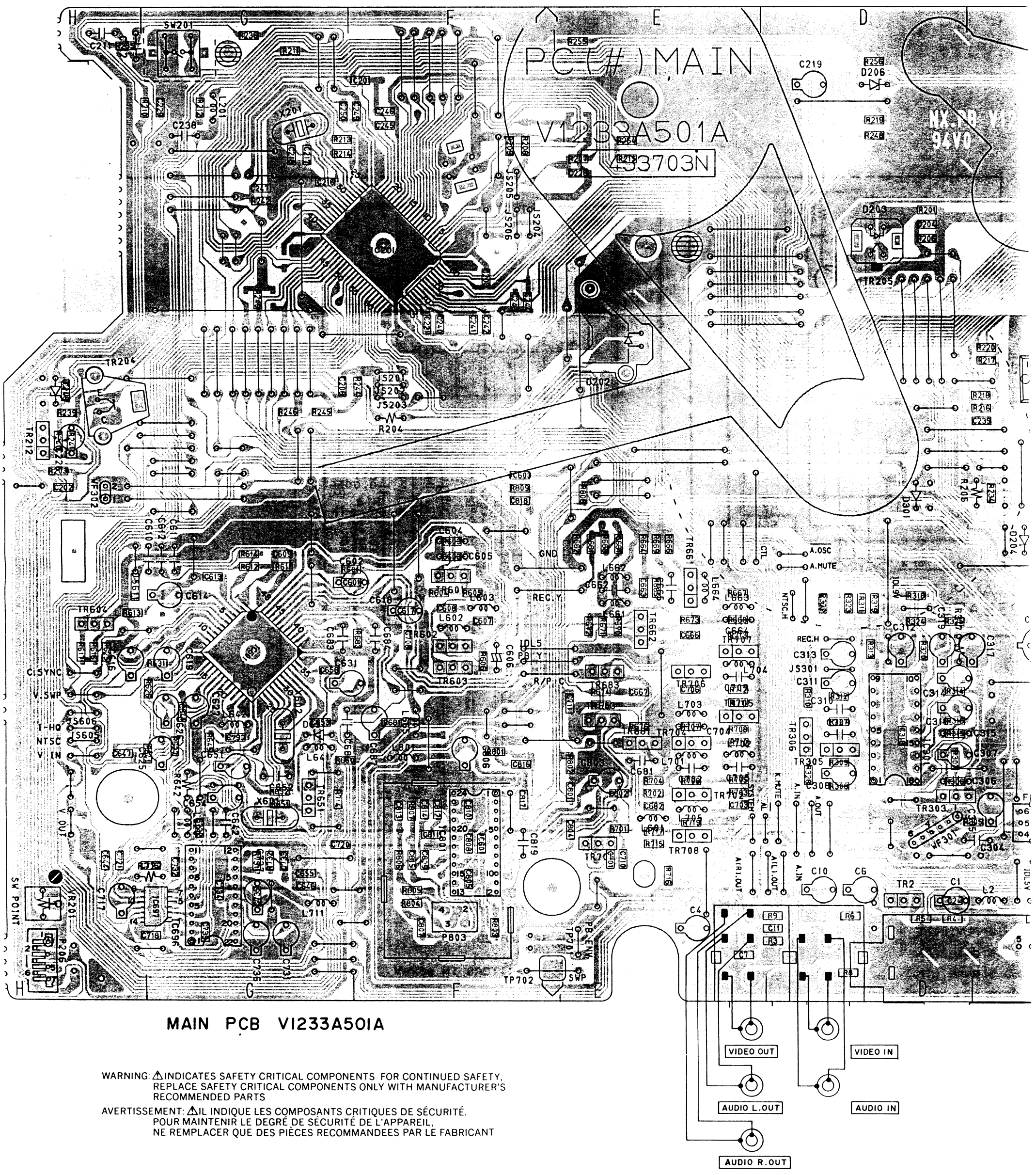
AS THE PRIMARY SIDE OF THE MAIN PCB'S POWER SECTION (BLACK COLORED PART) CONTAINS HIGH VOLTAGE, THERE IS RISK OF ELECTRIC SHOCK. BE SURE TO USE EXTREME CAUTION.

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV
ALL INDUCTORS IN μH
ALL DIODES ARE 1SS131T-77

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
(TAPE USED:
PAL COLOUR BAR TAPE)
( ):REC MODE

VS-P170EM, P1700
VS-R170EM, R1700
VS-K288, K338
MAIN 2/2
(VIDEO.POWER AUDIO.RF.I/O BLK)
SCHEMATIC DIAGRAM

No.4-3 V123303M
A01



MAIN PCB V1233A501A

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

PRINCIPAL PARTS LOCATION

ICs

IC101	A2
IC102	B5
IC201	F,G2
IC202	A,B1
IC301	D4
IC601	G4
IC696	G5
IC697	G5
IC801	F4,5

TRANSISTORs

TR2	D5
TR101	A3
TR102	A4
TR103	C5
TR201	B2
TR202	B1
TR203	B,C2
TR204	H2,3
TR205	D2
TR208	C3
TR209	C3
TR210	C3
TR211	C4
TR212	H3
TR213	C3
TR214	C3
TR215	C3
TR216	C3
TR301	C4,5
TR302	C5
TR303	D4
TR304	C4
TR305	D4
TR306	D4
TR601	F3
TR602	F4
TR603	F4
TR604	H4
TR607	E4
TR651	G4
TR661	E3
TR662	E4
TR663	E4
TR681	E4
TR683	E4
TR701	E5
TR702	E4
TR704	E4
TR705	E4
TR707	E4
TR708	E5
TR901	B3
TR902	B3
TR903	B1
TR904	B1
TR905	A1
TR906	A1
TR907	A1
TR908	B5
TR909	A1
TR910	A1
TR911	C5

CONNECTORs

P101	A5
P201	A1
P301	A1
P204	C2
P205	B1
P206	H5
P803	F5

WIREs

WF301	D5
WF302	H3

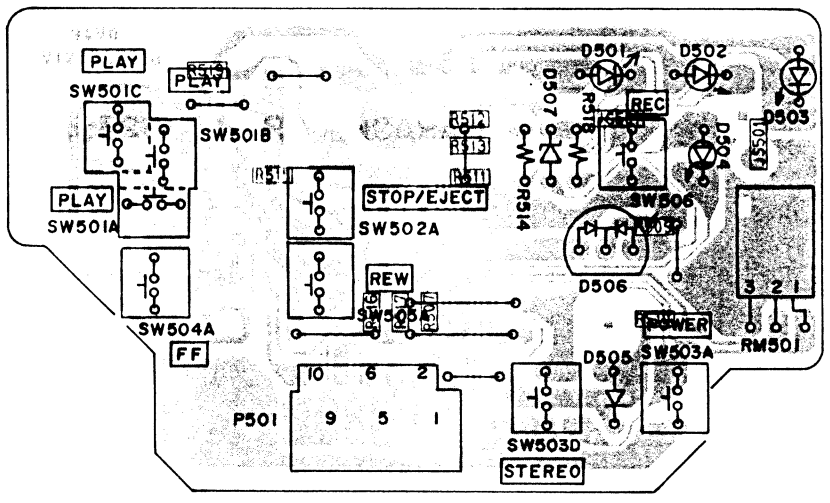
MESECAM → PAL

VIDEO IN

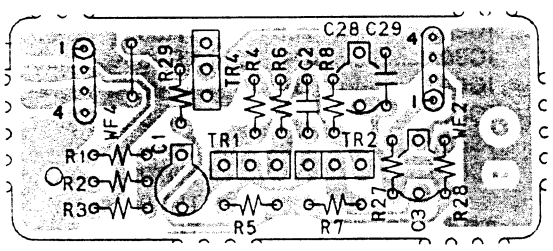
AUDIO IN

CAUTION:
As the primary side of the MAIN PCB's power section (black colored part) contains high voltage, there is risk of electric shock. be sure to use extreme caution.

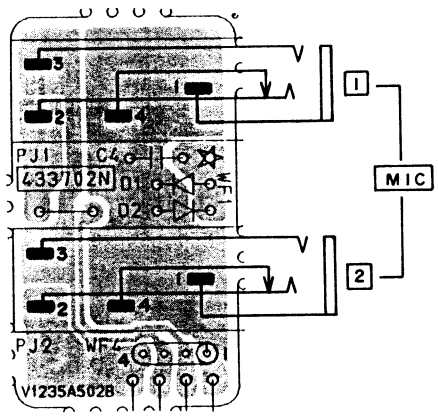
NOTE:
Parts differ depending on model number. refer to schematic diagrams for pertinent parts information.



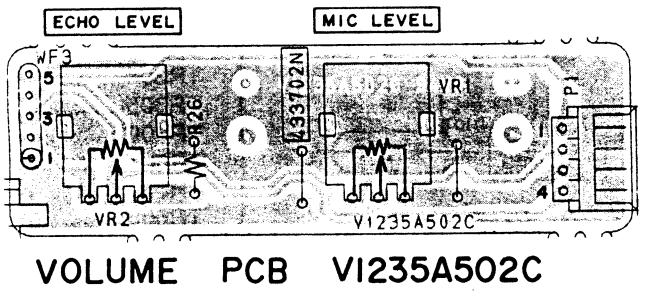
OPERATION PCB V1233A501B



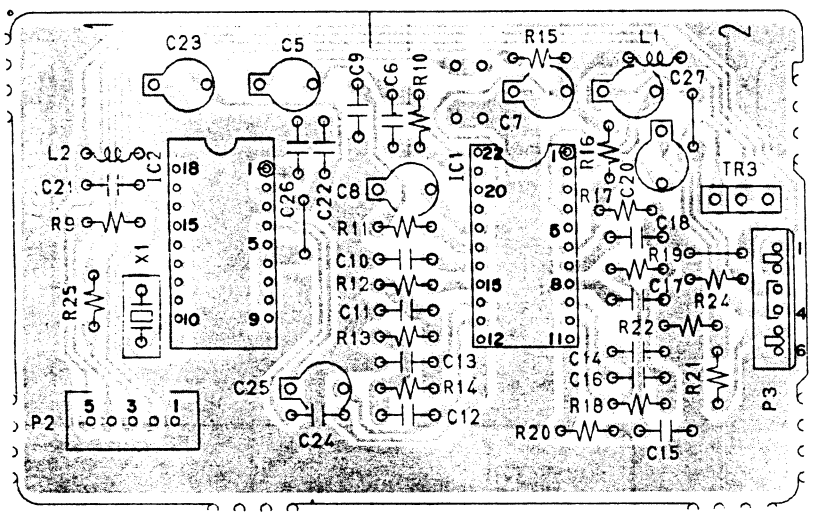
MIC AMP PCB VI235A502B



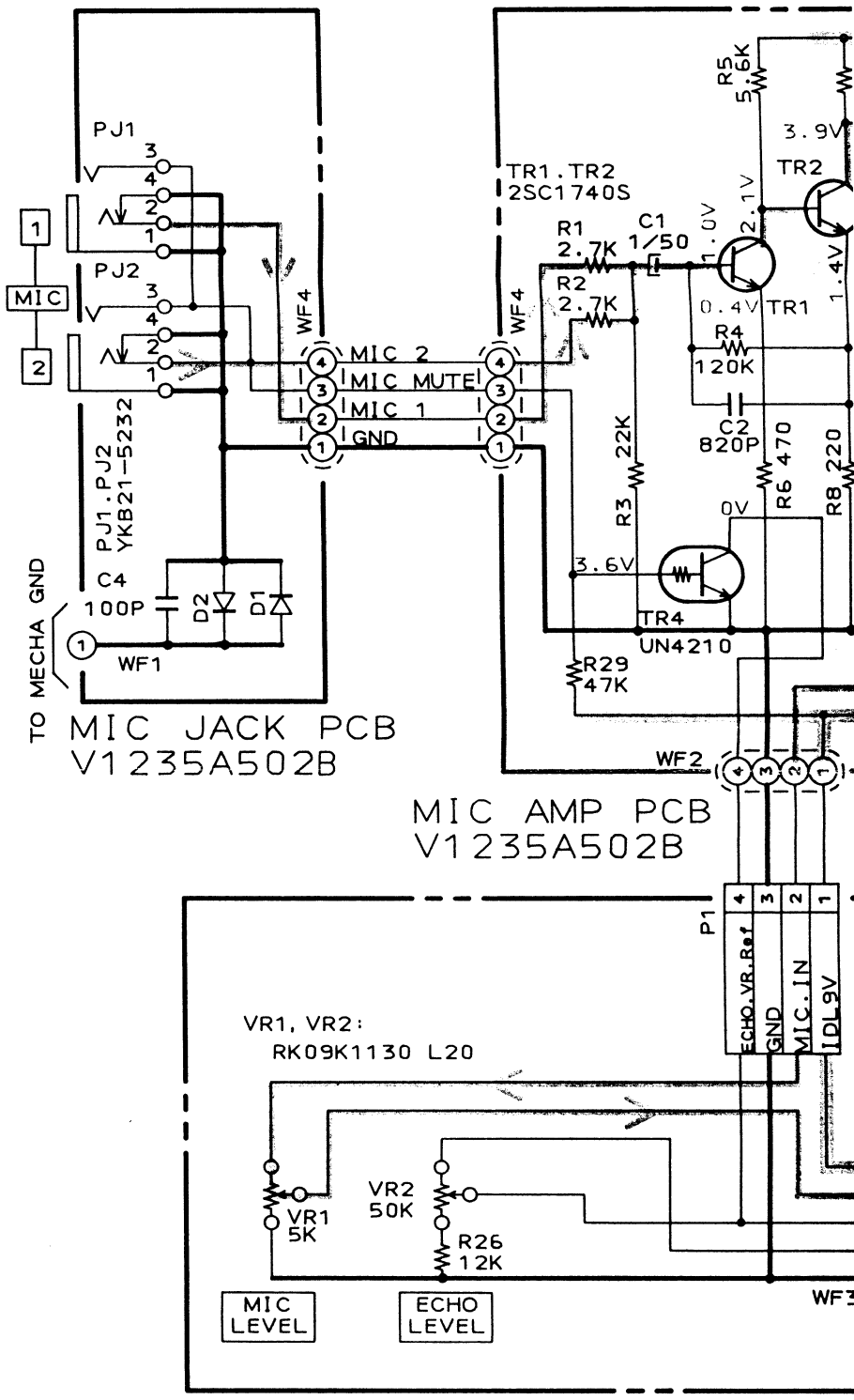
MIC JACK PCB
VI235A502B



VOLUME PCB VI235A502C



KARAOKE PCB VI235A502A



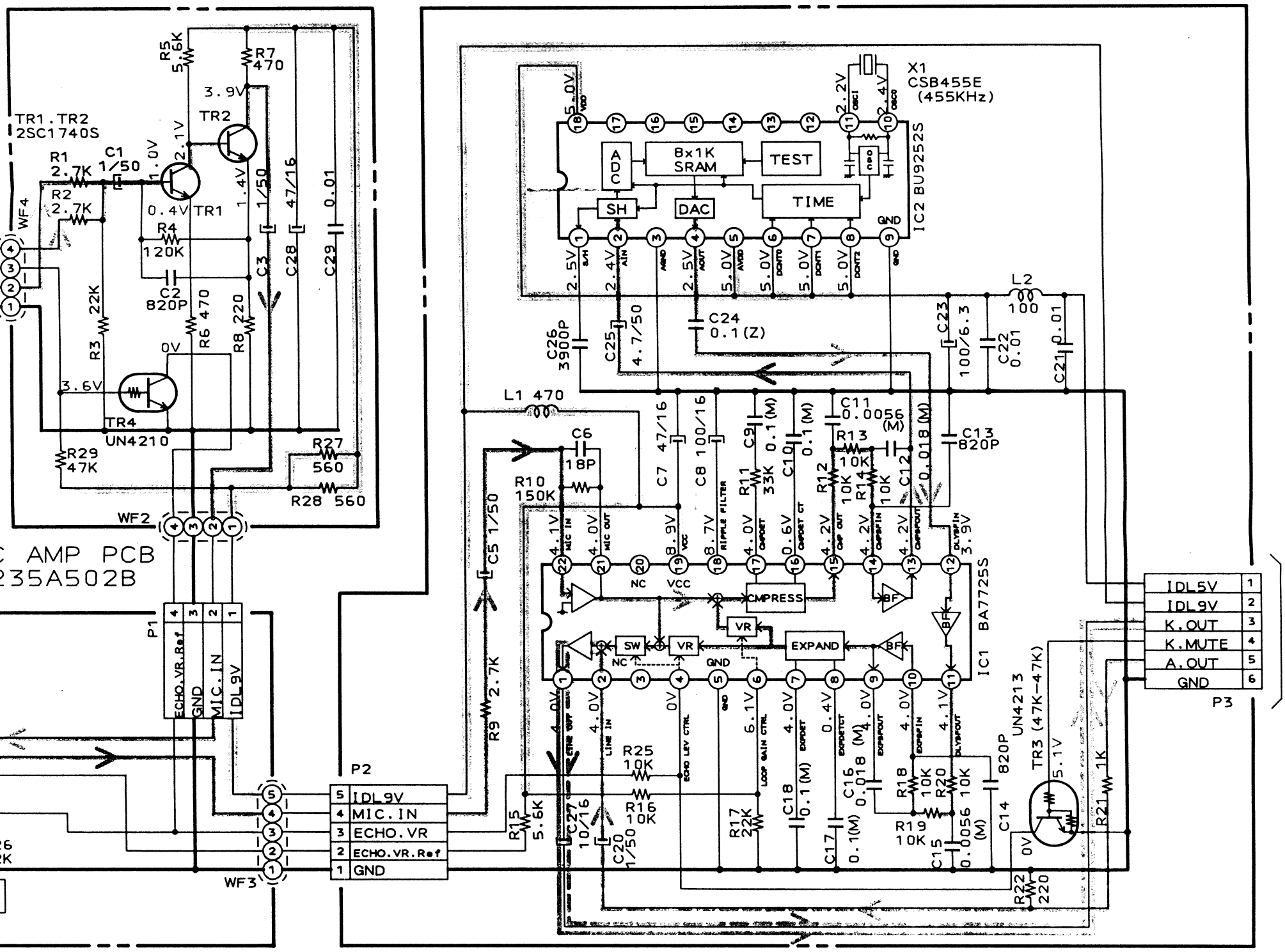
VOLUME PCB V1235A502C

B (POWER SUPPLY) LINE

PB AUDIO SIGNAL LINE

MIC/ECHO SIGNAL LINE

INDICATED VOLTAGES WERE MEASURED DURING E-E (STOP) MODE.



(POWER SUPPLY) LINE

AUDIO SIGNAL LINE

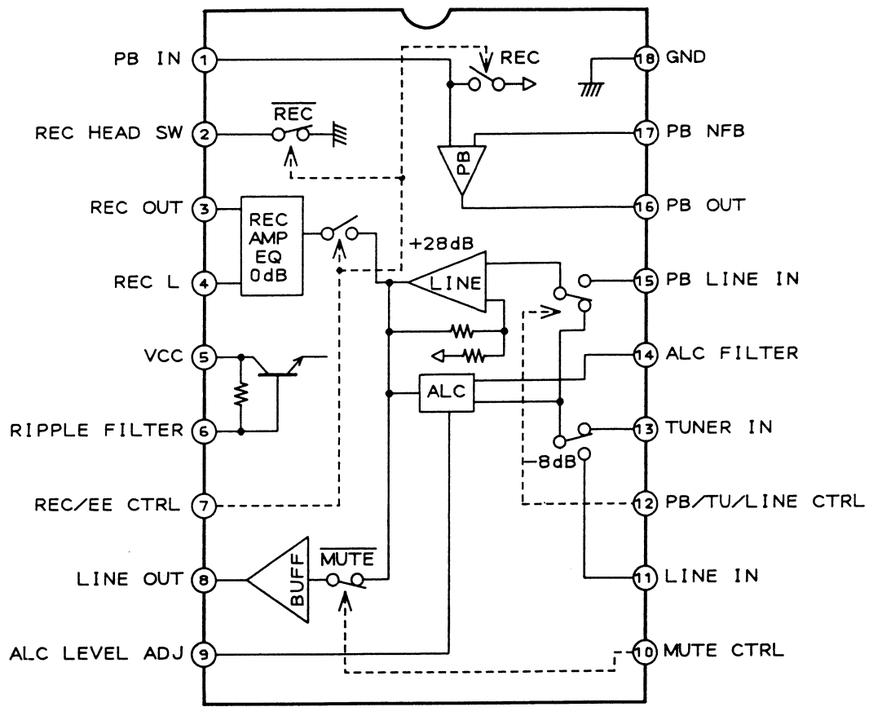
C/ECHO SIGNAL LINE

GES WERE MEASURED
) MODE.

NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μF (P=PF)
ALL ELECTROLYTIC CAPACITORS IN μF/WV
ALL INDUCTORS IN μH
ALL DIODES AER 1SS131T-77

VS-K288, K338
KARAOKE
SCHEMATIC DIAGRAMM
No.4-4 V123304M
A3

BA7797 (AUDIO REC/PB AMP)



CONTROL SWITCH FUNCTION TABLE

(1) REC/EE & PB/TU/LINE CONTROLS

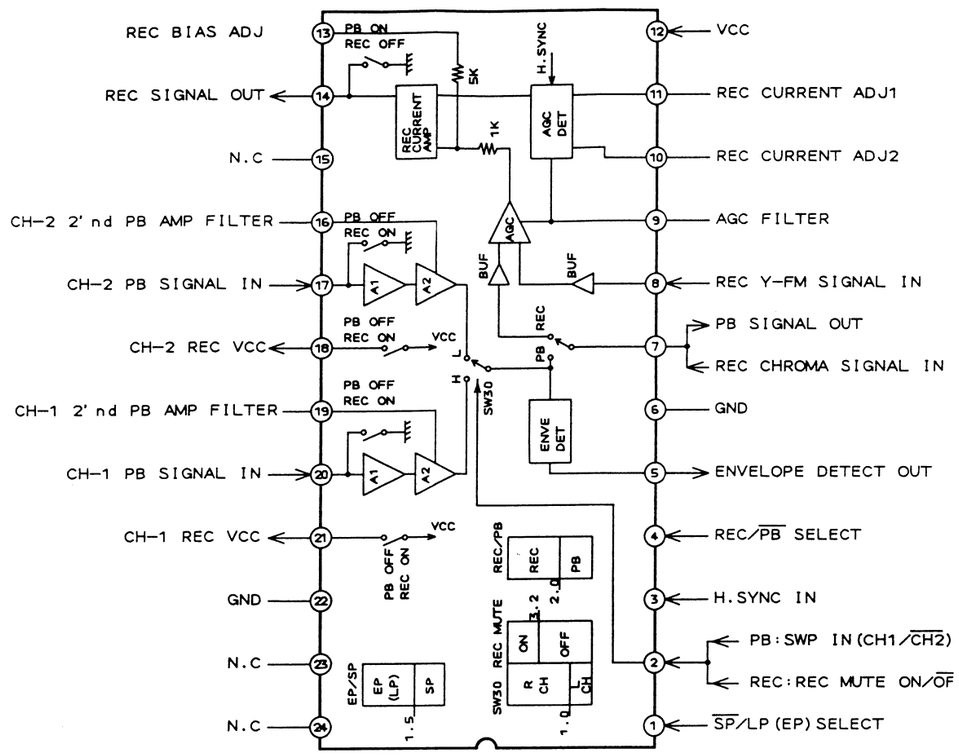
CONTROL PIN		MODE	FUNCTION			
REC/EE (⑦ PIN)	PB/TU/LI (⑫ PIN)		PB HEAD SW	REC HEAD SW	LINE SW	REC AMP
L	L	LINE	OFF	ON	LINE	OFF
L	M	TUNER	OFF	ON	TUNER	OFF
L	H	PB	OFF	ON	PB	OFF
H	L	LINE REC	ON	OFF	LINE	ON
H	M	TU REC	ON	OFF	TUNER	ON
H	H	inhibit	–	–	–	–

※ REC/EE : M → REC PAUSE MODE (REC HEAD SW : OPEN, REC AMP : OFF)

(2) MUTE CONTROL

CONTROL PIN	MODE	FUNCTION
MUTE (⑩ PIN)		LINE SW
H	MUTE	OPEN
L	$\overline{\text{MUTE}}$	CLOSE

LA7411M (2-CH HEAD AMP/REC AMP)



PIN No.	PORT NAME	I/O	FUNCTION
68	EA	I	Connect to the 5 V line.
69	L PWR	O	"POWER" LED ON/OFF control output. (H: green)
70	$\overline{\text{L I-HQ/PB}}$	O	"I-HQ" LED ON/OFF control output. (L: ON)
71	$\overline{\text{L PLAY}}$	O	"PLAY" LED ON/OFF control output. (L: ON).
72	$\overline{\text{L RPT}}$	O	"REPEAT" LED ON/OFF control output. (L: ON)
73	$\overline{\text{L REC}}$	O	"REC" LED ON/OFF control output. (L: ON).
74	TP4	O	Test pin for servo control circuit. (CM mix filter ON → H)
75	S.MUTE	O	Stereo mute control (H: mute ON).
76	STEREO.H	O	Artificial stereo control/LED control output. (H: STEREO, LED ON)
77	V_{DD}	I	+5 V power supply of this IC.
78	$\overline{\text{STEREO}}$	I	Artificial stereo availablity select control.
79	AUTO OFF	I	AUTO POWER OFF availablity select control.
80	REF	O	Reference voltage output for servo circuit.